

TECHNICAL REVIEW DOCUMENT
For
RENEWAL of OPERATING PERMIT 95OPAR118

Buckley Air Force Base (AFB)
Arapahoe County
Source ID 0050028

Prepared by Matthew S. Burgett, P.E.
December 2008 – January 2009

I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The original Operating Permit was issued August 28, 1997. The previous renewal Operating Permit was issued on July 1, 2002, and expired on June 30, 2007. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted June 23, 2006, and additional technical information submitted, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document (TRD) for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <http://www.cdphe.state.co.us/ap/Titlev.html>.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This facility consists of an Air Force Base on approximately 3,282 acres of land. The 460th Space Wing is the host organization for Buckley AFB. The transfer of ownership from the Colorado Air National Guard (COANG) to Buckley AFB took place on October 1, 2000. There are approximately 197 buildings on the Base with community and housing facilities being expanded. Approximately 12,844

active duty, civilian, guard/reserve, and contractors work and/or live at Buckley AFB. A number of other military organizations are tenants on the installation (Air National Guard, Army National Guard, US Army, US Navy, Department of Defense). The approximately 71-acre privatized military family housing unit located adjacent to Buckley AFB is not considered part of the Title V permitted facility.

Sources of emissions on the Base considered for this operating permit include: standby generators, fuel storage tanks, jet engine test cell, and solvent cold cleaners. Other emission sources on the Base include: generators, natural gas and fuel oil fired boilers, ground equipment, fuel storage and transfer, aircraft deicing, chemical use, fuel cell maintenance, small arms firing, explosive ordnance, and construction projects.

The Base is located near Aurora, Arapahoe County, Colorado. The Base is approximately 12 miles east of downtown Denver. The area in which the Base operates is classified as non-attainment for ozone.

There are no affected states within 50 miles of the Base. Eagles Nest Wilderness Area and Rocky Mountain National Park are Federal Class I designated areas within 100 kilometers of the Base. Florissant Fossil Beds National Monument is a Federal land area within 100 kilometers of the Base. Florissant Fossil Beds has been designated by the State to have the same sulfur dioxide increment as a Federal Class I area.

Emissions

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update the potential to emit based on revisions to permitted emission limits, and to update actual emissions.

		FACILITY-WIDE POTENTIAL TO EMIT						
Equipment	AIRS ID	PM	PM ₁₀	NO _x	CO	SO ₂	VOC	HAPs
Engine test cell	101			6.8	4.8		2.5	0.01
18 generators	102 - 105			198.6	44.5	34.7	29.5	2.68
Gasoline storage tanks	110						1.2	
Cold Cleaners	111						0.3	0.008
AAFES gasoline storage tanks	113						9.3	1.11
Gasoline storage tanks	114						6.1	
Diesel storage tanks	115						0	
Fuel service station	116						0.4	

Filling of mobile refueling tanks	117						0	
DQCA generator	118			3.4	4.2		0.5	
Kohler generator	119			2.8	3.5		0.4	
DFEH generator	120			1.6	0.9		0	
Exempt generators	106			83.1	17.9	5.5	6.7	0.2
Exempt nat. gas equip	107			53.4	44.8		2.9	1.0
Exempt duel fuel boilers	N/A			42.6	27.2	16.8	1.8	0.6
Exempt nat. gas equip	108			8.4	3.6		0.5	0.2
Exempt arresting barrio engines	109			0	0.8		0	0
Exempt gasoline generators	N/A			0.6	25.7	0	1.3	0
Exempt nat. gas generators	N/A			2.7	0.3	0	0.1	0.1
Exempt ground equip – diesel	N/A			12.0	2.6	0.8	1.0	0
Exempt ground equip - gasoline	N/A			0.1	5.0	0	0.2	0
Exempt fuel storage	N/A						2.0	0.2
Exempt fuel transfer	N/A						0.4	0
Aircraft deicing	N/A						0	
Chemical use	N/A						13.6	1.4
Fuel cell maintenance	N/A						0.1	0
Landfill	N/A						1.6	0.2
Small arms firing	N/A				0.6			
Explosive ordnance	N/A				0			
Construction projects	N/A			2.5	0.6	0.2	0.2	
TOTALS		23.57	23.57	418.6	187.0	58.0	82.6	7.63

¹ The PTE for the categorically exempt equipment was determined based on a table submitted by Buckley AFB (Table ES-2 Base-Wide Potential Criteria Pollutant and HAP Emissions, CY 2007 Air Emissions Inventory) dated April 28, 2008.

	TONS PER YEAR						
	FACILITY-WIDE ESTIMATED ACTUAL EMISSIONS Calendar Year 2007 ²						
	PM	PM ₁₀	NOx	CO	SO ₂	VOC	HAPs
TOTALS	-	6.12	61.31	25.76	1.69	21.79	2.17

² The actual emissions were determined based on the table submitted by Buckley AFB (Table ES-1 Base-Wide Actual Criteria Pollutant and HAP Emissions, CY 2007 Air Emissions Inventory) dated April 28, 2008.

NESHAP Applicability

Subpart ZZZZ– National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines:

Applies to generators under AIRS ID 118-120

In the final NESHAP, EPA has included a provision that states that owners and operators of new and reconstructed stationary engines located at area sources will be in compliance with the NESHAP requirements if they meet the requirements of the SI NSPS (40 CFR part 60, subpart JJJJ) or the CI NSPS (40 CFR part 60, subpart IIII), as applicable. No further requirements apply for such engines under this part.

Existing engines at area sources have no requirements under this rule at this time.

Buckley AFB is considered an area source of HAPs. The area source requirements of Subpart ZZZZ have not yet been incorporated into Colorado Regulation No. 8. This requirement will be considered Federal-Only at this point. The Division will include the Subpart ZZZZ requirement on the applicable engines.

Subpart CCCCCC - National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities:

Buckley AFB has some storage tanks subject to this subpart. This includes tanks permitted under AIRS ID 110 & 113. The compliance date is January 10, 2011 for these existing sources. The Division investigated the Bldg. 407 gasoline tank with regards to subpart CCCCCC. This subpart does not apply to this tank since the tank is not used to fuel vehicles.

Buckley AFB must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Gasoline handling measures are listed in §63.11116(a)(1) through (4). Also, submerged filling must be used per §63.1117(b).

In addition, tanks are required to meet the following requirements:

- A vapor balance system and associated management practices.
- Management Practices for Gasoline Cargo Tanks Unloading at Gasoline Dispensing Facilities
- Applicable testing requirements.
- Applicable notifications, record keeping, and reporting.

The requirements of Subpart CCCCCC have not yet been incorporated into Colorado Regulation No. 8. These requirements will be considered Federal-Only

at this point. The Division will include the Subpart CCCCCC requirements in the permit for the applicable storage tanks.

There is some confusion with regards to this subpart. It was unclear to the Division whether the vapor balance and management practices would apply to all the tanks at Buckley subject to this rule, or only the tanks which exceed the 100,000 gal/month throughput level. EPA responded to a question from the Division and identified that the throughput threshold would be the total of all the tanks at the facility. Thus, all subject tanks must be controlled with vapor balance. EPA did note that they have received a petition that requests consideration for large sites with low volume tanks at separate locations. EPA has not concluded anything with regards to this situation as of the issuance date of this permit. However, it is possible that the rule may change in the future to allow for loosened requirements for some of the low volume tanks on site.

Buckley AFB believes that the AAFES station tanks should be deemed in compliance with the §63.11118 requirements since the tanks are required by Colorado Reg. 7 to operate with Stage I vapor controls. The Division does not agree with this conclusion. In order to be deemed in compliance under this subpart, the vapor balance system must:

- Achieve an emission reduction of at least 90%, OR
- Operate using management practices at least as stringent as those in Table 1 to subpart CCCCCC.

AND

- Be in compliance with an enforceable rule/permit that contains the requirements of either of the above requirements (by January 10, 2008).

A review of the previous Operating Permit and the Regulation No. 7 requirements revealed that they do not specifically require 90% reduction, nor do they require the specific management practices contained in Table 1 of the subpart. It could be argued that the use of Stage I vapor controls will likely result in 90% control. However, subpart CCCCCC requires the rule or permit to contain a specific requirement for 90% control in order to be automatically deemed in compliance.

Subpart BBBB – National Emission Standards for Hazardous Air Pollutants for Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities:

Buckley AFB reported that they do not have any tanks subject to this rule.

NSPS Applicability

Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines:

Applies to generators under AIRS ID 118-120. These generator engines are subject to the non-emergency generator provisions of this NSPS. The requirements include:

- specific emission limitations
- smoke emission standards
- fuel requirements
- sulfur content
- monitoring requirements
- notification, reporting, and recordkeeping requirements

The requirements have been added into the permit for those engines that are subject.

RACT Applicability

RACT applies to the three new generators (AIRS ID 118-120). Regulation No. 3 requires RACT for CO and PM₁₀. Regulation No. 7 requires RACT for VOC. Emissions from these engines are very low. They are all subject to NSPS IIII. The Division will assume compliance with the RACT requirement as long as compliance with NSPS IIII is maintained.

Compliance Assurance Monitoring (CAM) Applicability

Buckley AFB is not required to obtain a CAM plan since no emission points at this facility use a control device to achieve compliance with an emission limitation or standard to which they are subject and have pre-control emissions that exceed or are equivalent to the major source threshold.

III. Discussion of Modifications Made

Source Requested Modifications

A number of modifications were made to the permit as requested by Buckley AFB. Modification requests will be summarized under the appropriate emission source (or permit location) listed below:

Page following cover page

The contact address was updated.

Section I – General Activities & Summary

The permitted activities description was updated to reflect current operations.

A request to remove the reference to all construction permits was submitted. The Division will leave these references in the operating permit since the construction permits are the basis for many of the operating permit conditions and must be referenced as the underlying applicable requirement.

The Summary of Emission Units Table was updated.

The size of engine 103 was corrected to 1106 kW.

Section II – Specific Permit Terms

Buckley AFB recommended multiple changes to the conditions previously under Section II.1 of the previous Operating Permit. The Division determined that these conditions are not necessary since the equipment covered by these conditions (fuel burning equipment between 0.3 – 10.0 mmbtu/hr) are considered APEN Exempt due to the APEN exemptions from Regulation No. 3, Part A identified below. These conditions have been removed from the Operating Permit.

II.D.1.ggg. Each individual piece of fuel burning equipment that uses gaseous fuel, and that has a design rate less than or equal to ten million British thermal units per hour, and that is used solely for heating buildings for personal comfort.

II.D.1.k. Each individual piece of fuel burning equipment, other than smokehouse generators and internal combustion engines, that uses gaseous fuel, and that has a design rate less than or equal to five million British thermal units per hour. (See definition of fuel burning equipment, Common Provisions Regulation).

AIRS ID 102-105 – Standby Generators

Buckley AFB requested that the Division use manufacturer-supplied emission factors as opposed to the general AP-42 emission factors. The Division had multiple conversations with Buckley AFB regarding how to organize the conditions for this group of generators. It was agreed to group all the generators under one set of conditions with combined emission limits and operating restriction. Buckley requested an operating limit based on power production (kW-hr per year). The Division drafted the conditions using the requested power production limit and calculated emissions using the highest emission factor found for each pollutant from this group of engines.

These generators were previously considered emergency generators. However, they are not necessarily operated as true emergency generators. The permit will now identify them as standby generators to be more accurate.

Buckley AFB also requested that the opacity requirement be modified to an annual requirement, similar to other recently issued Operating Permits. The

Division has made this change since it will likely result in more frequent visible emissions testing. The previous requirement only required opacity readings if a generator was operated for more than 8 continuous hours.

Language in this condition has been updated to the current standard language. Changes include:

- Emission limits updated.
- Emission factors updated to highest manufacturer-supplied for each pollutant.
- Power production limit included.
- Title V language updated for opacity. One Method 9 opacity observation is required on an annual basis. A 2nd Method 9 opacity reading is required if any generator is operated more than 250 hours of operation.
- The Regulation No. 1 SO₂ emission requirement has been included.

AIRS ID 114-115 Consolidated Fuels Facility

These tanks are permitted under construction permit 06AR1233S issued 8/15/2007. Buckley AFB did not request to incorporate these tanks into the Operating Permit since they have not been constructed yet.

JP-8 Fuel Storage Tanks

Buckley AFB requested modification of the inspection requirement from Regulation No. 7, Section VI.B.2.a. The Division reviewed the request and justification and does not agree that any modification is necessary. The inspection requirements listed in Section VI.B.2.a.(3)(C) are not required every six months as Buckley AFB has interpreted. These requirements only need to be conducted during complete inspections as outlined in Section VI.B.2.a.(3)(B).

Additionally, as requested by Buckley AFB, the Division has corrected the permit to clarify that the Regulation No. 7, Section VI.B.2.b. requirements only apply to the JP-8 fuel storage tanks. This requirement only applies to above ground storage tanks greater than 40,000 gallons.

AIRS ID 113 AAFES Service Station

Buckley AFB brought a potential problem to the attention of the Division. The equipment manufacturer of the Stage II vapor recovery system is no longer in operation. It may be difficult to obtain specific replacement parts as outlined in the manufacturer's operations manual. Buckley has requested, and the Division has approved, alternative methods to maintain the stage II vapor recovery system. Condition 5.5 outlines the methods to be used, including: manufacturer's specifications and CARB specifications. Buckley AFB can contact the Division to approve other methods if needed. Approval should be obtained in advance.

AIRS ID 101 Jet Engine Test Cell

The previous Operating Permit required Buckley AFB to monitor hours of operation at various power levels to determine emissions. Buckley AFB requested to limit fuel use and monitor emissions based on fuel consumption. The Division discussed various options with Buckley AFB and it was decided to limit the number of tests each year in order to limit emission rates and determine emissions. The F-16 jet engines are tested using a standard testing procedure which requires operation at the various power levels for specific time periods. A maximum of 50 tests was requested by Buckley AFB. Since the tests are standardized, it is more convenient to monitor the number of tests instead of the hours of operation. The number of tests should be used in conjunction with the standardized testing times at each power setting and the emission factors to calculate the emissions.

Appendix A

The list of insignificant activities has been updated.

Other Modifications

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal. These changes are as follows:

Section I – General Activities and Summary

- The order of the conditions in this section has been rearranged to match recently issued Operating Permits.
- The attainment status of Arapahoe County was updated.
- Condition 21 in Condition 1.5 was renumbered to 22. The renumbering change was necessary due to the addition of the Common Provisions requirements in the General Conditions of the permit.
- In Condition 1.4, General Condition 3.d. was added as a State-only requirement.
- Condition 3.1 was drafted to reflect the current status of Buckley AFB with respect to PSD and NANSR.
- The table in Section 6 has been updated to reflect current equipment and control devices. The “Date Installed” column has been removed. This information can be found in the Operating Permit application and the APENs.

Section II – Specific Permit Terms

- Previous Condition 6 (Fugitive VOC Emissions) has been removed from the permit. Buckley AFB does not have any permit required surface coating operations.
- Previous Condition 8 has been removed from the permit. This condition outlined facility-wide emission limits. These were originally included as emission limits in order to consider Buckley AFB a minor stationary source. Buckley is a major stationary source now and these limits are not necessary.
- Previous Condition 9 has been removed from the permit. This condition required Buckley AFB to complete a facility-wide emission inventory by April 30 of every year. Buckley AFB should maintain records of the emission units on site and record the PTE of these units. However, it is not necessary to make this a permit requirement.
- Previous Condition 10 (odor monitoring) has been removed from the permit. The Division does not typically require odor monitoring and Buckley AFB has no history of odor problems.

AIRS ID 118, 119, 120 –Standby Generators

As requested by the Division, Buckley AFB submitted three APENs (on August 21, 2008 and revised APENs submitted December 15, 2008) for these generators that are subject to the requirements in 40 CFR Part 60 Subpart IIII, “Standards of Performance for Stationary Compression Ignition Internal Combustion Engines”, as adopted by reference in Colorado Regulation No. 6, Part A. If not for being subject to NSPS IIII, these engines would likely be considered APEN Exempt (and insignificant activities). However, Colorado Regulation No. 3 requires emission units to submit APENs if they are subject to a NSPS. Buckley reported the following manufacture dates for these engines: 118= 11/2006, 119= 6/2006, 120=3/2007.

The applicable requirements have been incorporated into the Operating Permit as requested, under Section II.2, II.3 & II.4. Requirements include:

- NO_x and CO emission limits.
- Operating hours limits and tracking of generator operating hours.
- Title V language for opacity. One Method 9 opacity observation is required on an annual basis if any fuel oil is used during the year. A 2nd Method 9 opacity reading is required if operated more than 250 hours of operation.
- The Regulation No. 1 SO₂ emission limit.
- The Federal-only NESHAP Subpart ZZZZ requirement to comply with NSPS Subpart IIII.
- Requirements of 40 CFR Part 60 Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Requirements include emission standards for non-emergency engines, fuel standards, monitoring, notification, reporting, and recordkeeping requirements.

AIRS ID 113 – AAFES Service Station

- The 20% opacity limit was added as Condition 5.3. Compliance is presumed based on the nature of this operation.
- The NESHAP Subpart CCCCCC requirements were added as discussed previously.
- The Stage II requirements were modified as discussed previously.
- The Regulation No. 7, Section VI requirements were included in the permit as Condition 5.6.

AIRS ID 110 – MOGAS Tanks

These two tanks were moved to their own condition. They were previously grouped with many other fuel storage tanks. The VOC emissions exceed 1 tpy and these tanks are APEN required, where the others are APEN Exempt.

- Gasoline throughput and VOC emission limits were added to the permit based on the APEN dated June 8, 2006.
- The 20% opacity limit was added as Condition 6.3. Compliance is presumed based on the nature of this operation.
- The NESHAP Subpart CCCCCC requirements were added as discussed previously.
- The Regulation No. 7, Section VI requirements were included in the permit as Condition 6.5.
- The Regulation No. 7, Section V.B requirements were included in the permit as Condition 6.6.

Various Fuel Storage Tanks

This section language was restructured to more clearly identify some requirements the only apply to the large JP-8 ASTs.

- Regulation No. 7, Section VI.A requirements were included in the permit as Condition 7.1.
- The 20% opacity limit was added as Condition 7.5. Compliance is presumed based on the nature of this operation.

Section IV – General Permit Conditions

- The Affirmative Defense Provision for Excess Emissions during Malfunctions language was added to condition 3.d.
- Condition 5 & 21: Replace “upset” with “malfunction”
- The definition of “prompt” has changed and Condition 21 has been updated with the new definition.

- Minor language changes to Condition 22.d have been incorporated.

Appendix B & C

- This language has been updated to reflect current standard language.

Appendix D

- The address of EPA has been updated.

Appendix F

- Cleared of past modifications.

Appendix G & Appendix H

- Removed - Emission factors are listed in the other permit tables of Section II.